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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/665,996	09/18/2003	Franz Xaver Zach	FND920030170US1	6600
7590	04/15/2005		EXAMINER	
John A. Jordan 11 Hyspot Road Greenfield Center, NY 12833			SIEK, VUTHE	
			ART UNIT	PAPER NUMBER
			2825	

DATE MAILED: 04/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/665,996	Applicant(s) ZACH, FRANZ XAVER	
	Examiner Vuthe Siek	Art Unit 2825	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 8, 11-14, 17, 19 and 20 is/are rejected.
- 7) ☒ Claim(s) 6, 7, 9, 10, 15, 16 and 18 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>9/18/03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This office action is in response to application 10/665,996 filed on 9/18/2003.

Claims 1-20 remain pending in the application.

Drawings

2. The drawings are objected to because Fig. 3, items 47, 49, 51 and 53 as described in the specification (page 11) to be solid lines marked with X's, where items 49, 51 and 53 pointing to solid lines with unmarked X's. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

3. The disclosure is objected to because of the following informalities: page 12, line 25, "points 59" should be --points 57-- as correctly shown in Fig. 3.

Appropriate correction is required.

Claim Objections

4. Claims 1, 12, 19, 20 and 11, are objected to because of the following informalities: claim 1, line 5, "the distance" should be changed to --distance values--; claim 12, line 10, "the distance values" should be changed to --distance values--; claim 19, line 5, "the distance values" should be changed to --distance values--; claim 20, line 7, "the distance values" should be changed to --distance values--, in order accurately defined the claimed invention and provide proper claim antecedent basis. As to claim 11, "the distance to the edge of RX" needed clarification as to what it is. "RX" needed to be detailed (do the same as in the specification). Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-5, 8, 11-14, 17 and 19-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Chang (US 2004/0153979).

7. Claims 1, 3, 12, 19 and 20, Chang teach teaches a method of creating a pattern for a mask adapted for use in lithography production of layout features on a substrate comprising input device pattern specification (design mask pattern); input defect information, two-dimensional function D characterizing a defect model based on one or more defect size, defect probability distribution, defect shape and other information about the defects being considered in the yield analysis [0034] (a predicted layout pattern); computing kernels representing interaction of defect information and input pattern to give yield mapping, yield map data using defect model, linear or non-linear function (yield curves based upon distance values between sampling points at corresponding edge features positions of the design mask and predicted layout pattern) [0034-38]; and output predicted yield map (determining yield values for edge features positions of the predicted layout pattern) (Fig. 2-4 and its description, summary).

Distances D1 and D2 can be varied, where the yield map functions (yield curves) are in

function said distances. The distances correspond to edge-distances at any points or locations between edge of the mask pattern and predicted edge layout pattern determined to be as a defect model as in the claimed invention. In addition, Chang teaches distance "d" is selected such that interaction with any potential feature which could have a significant effect on yield for a given defect model.

8. As to claims 2, 4-5 and 13-14, Chang teaches distance "d" is selected such that interaction with any potential feature which could have a significant effect on yield for a given defect model. The design mask pattern (design feature 310 of Fig. 3-4), and yield map analysis halo form a yield analysis zone (predicted layout pattern). The yield analysis zone is used as input to the yield map computation unit to specify the patterns to be used in the process of Fig. 2, so that a yield map for the zone or a set of related zones corresponds with a pattern pre-image as computed [0037]. Therefore, the yield analysis range should be selected to encompass only those features that could have an effect on yield above a certain threshold for a give defect model. The teachings correspond to the claimed limitations.

9. As to claims 8 and 17, Chang teaches distance "d" is selected such that interaction with any potential feature which could have a significant effect on yield for a given defect model. The yield analysis zone is used as input to the yield map computation unit to specify the patterns to be used in the process of Fig. 2, so that a yield map for the zone or a set of related zones corresponds with a pattern pre-image as computed [0037]. The distance "d" and the yield analysis zone determine a range of movement of the design edge from its original design position [0038]. In addition,

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Chang teaches localized yield map data may be provided using more than one defect model, combined using linear or non-linear functions. Thus, this suggests a single yield curve function can be used.

10. As to claim 11, Chang teaches distance "d" is selected such that interaction with any potential feature which could have a significant effect on yield for a given defect model. The yield analysis zone is used as input to the yield map computation unit to specify the patterns to be used in the process of Fig. 2, so that a yield map for the zone or a set of related zones corresponds with a pattern pre-image as computed [0037]. The distance "d" can be extended and the yield analysis zone determines a range of displacement of distance of the edge of a design feature [0038, Fig. 3-4]. In addition, Chang teaches localized yield map data may be provided using more than one defect model, combined using linear or non-linear functions.

Allowable Subject Matter

11. Claims 6-7, 9, 10, 15-16 and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art of record does not teach or fairly suggest the distance values include the value of the width of a pair of metal lines and the distance between the metal lines and the yield function is represented by a family of yield curves that are a function of the width of the metal lines and the distance there between; yield function is represented by a family of lithography limited yield curves of a metal layer process that are a function of the values of line width and space width using process window conditions and control of dose and focus;

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and the yield function is represented by a single yield curve that is a function of the distance between metal line edge and a fixed point on the inter- level contact.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vuthe Siek whose telephone number is (571) 272-1906. The examiner can normally be reached on Increase Flextime.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith can be reached on (571) 272-1907. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Vuthe Siek


VUTHE SIEK
PRIMARY EXAMINER